A. F. MEYER AND ASSOCIATES, INC.

ENVIRONMENTAL, NOISE, AND OCCUPATIONAL HEALTH CONSULTANTS

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EVALUATION OF ALTERNATIVE REVIEW PLANS FOR THE DEPARTMENT OF ENERGY SAFETY ANALYSIS AND REVIEW SYSTEM

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ABSTRACT

This technical report presents A. F. Meyer and Associates, Inc.'s evaluation of alternative means of providing the independent safety analysis reviews required under DOE 5481.1. The relative merits of the following entities performing the reviews are discussed:

- DOE Headquarters Staff
- DOE Operations Offices
- DOE Energy Technology Centers
- Contractors/Consultants
- Organizational Combinations

This report is intended to provide a basis for a policy decision to be made by DOE officials. Thus, although the pros and cons of each alternative are delineated herein, no recommended course of action is specified.

CONTENTS

1. INTRODUCTION

1.1 OVERVIEW

The DOE Safety Analysis and Review System (SARS), established by DOE 5481.1, is designed to ensure that DOE operations are subjected to a systematic life cycle evaluation of the safety risks to people, property, and the environment, both on and off site. Central to the SARS concept is the requirement that safety analyses conducted by the responsible operating or design entity be subjected to an independent review process. This review results in a written authorization by the designated DOE official for the operation to proceed.

DOE Order 5481.1 requires the SARS review to include a documented evaluation of the adequacy of the operation's preventive or mitigative design features. Review of the administrative control provided to limit the probability of an adverse occurrence of the severity of the hazard is also required. In addition, the review provided by the line program organization must be conducted primarily by individuals not involved in the DOE operation being evaluated.

In the ASFE SARS Implementation Plan, DOE Headquarters (HQ) Deputy Assistant Secretaries and Program Managers are delegated the responsibility for arranging for independent reviews and authorizations for low risk operations. The Assistant Secretary for Fossil Energy is the official designated in the plan to authorize all moderate and high risk operations. This authority may be delegated to field operations* by the Assistant Secretary.

At present, no formal policy decision has been made in regard to field responsibility for the review of certain moderate and high risk projects. Further, there is an overall lack of communication and coordination between those performing the safety analyses and those in ASFE often expected to provide the independent reviews. This lack of communication, coupled with the absence of policy guidance, is causing considerable confusion in SARS implementation, and ultimately could result in project delays. Thus, a timely decision in regard to the respective responsibilities of DOE Headquarters and field organizations is urgently needed.

The implementation of DOE Order 5481.1 imposes a substantial workload on ASFE. In light of the current pressures to reduce the use of contractors and to reduce or contain the number of government employees, ASFE is faced with a serious dilemma. The only way to avoid a necessary increase in at least one of these areas for SARS implementation would be to

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*As used herein, "field operations" include Energy Technology Centers (ETCs), Operations Offices, and the Huntsville District, U.S. Army Corps of Engineers.

reduce the requirements under the Order. Since this appears improbable,* DOE officials ultimately will need to judge the most cost effective means of meeting the objectives of SARS. This type of detailed analysis is beyond the scope of this study; however, this report is intended to raise many of the issues which will need to be considered further in order for an informed decision to be made.

A major concern in relation to the above cited dilemma is the current lack of ASFE resources to meet environmental, safety, and health requirements. These requirements include those imposed by statute (e.g., Clean Air Act, NEPA, OSH Act), Executive Order (e.g., E.O. 12196 in regard to Federal employee occupational safety and health), and DOE internal directives in response to Congressional mandate or amplification of statutory and E.O. requirements (e.g., DOE 5481.1, Safety Analysis and Review System; DOE 5482.1, ES&H Appraisal Program).

Prior studies for DOE by this contractor,** made while DOE 5481.1 was in the preliminary draft stage, identified extensive needs for additional resources at Headquarters and at the ETCs. The suggested "in-house" capabilities to meet the existing OSH programmatic needs and overall ES&H appraisal requirements have not yet been achieved within ASFE.

There are implications in the current and projected overall environment, safety, and health resource situation to both SARS and the ASFE OSH appraisal requirements (the subject of a separate study under this contract). These implications are put into perspective when the estimated resource requirements for FY 81 and FY 82 are viewed. The September 1980 "Analysis of Environmental, Safety, and Health Funding," submitted to OMB on Schedule 90*** is of particular interest. It shows for ASFE a steady decrease in total Federal ES&H manpower from the FY 90 level of 22, to a projected FY 82 level of 12.6 for all of ASFE (Headquarters and field). The allocation for SARS (presumably including both analysis, overview, and review) changes from 6.0 actual in FY 80, to an estimated 4.2 in FY 82. Contractor support for SARS does increase from 14 staff years in FY 80 to a projected 23 in FY 82 (all assumed by us to be for safety analyses). Funding levels, on the other hand, remain fairly constant.

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*The Safety Analysis and Review System requirement is a direct outgrowth of Congressional concern. This report does not address the alternative of reducing the scope and content of this effort. ASFE-OPTA may well wish to examine that consideration, in conjunction with ASEV.

**"Plan for Fossil Energy Program Overview of Compliance with OSHA."

***Required by OMB Circular A-11, "Preparation and Submission of Budget Estimates."

The problem is further emphasized in the DOE FY 1982 "Congressional Budget Program Overview." It is stated several times that the FE Headquarters and field offices* do not have the appropriate personnel or the openings to hire people to properly administer a number of their programs. Approximately $12 million is proposed for Advanced Research and Technology Development, of which environmental, health, and safety analyses (and, thus, SARS) are a part. The amount dedicated to SARS implementation is not delineated.

The earliest that any increases in resources can be effected through the normal budget process is FY 83 (beginning October 1982). ASFE thus has two distinct problems. The first is to establish an interim approach to the SARS review requirement for the time period CY 1981-1982; and next to determine the most cost effective and management responsive system for FY 1983 and beyond. Unfortunately, the lengthy life span of major system acquisition projects may make transition difficult from a resource constrained near term approach to a more realistic long term one. Specifically, the review process for a major demonstration plant should be of an iterative nature, beginning early in the analysis phase. Waiting until all elements of the analysis are finished before initiating the formal review can either result in delays in the schedule, or, in the alternative, the review being a pro forma "rubber stamp."

The central determinant of the resource requirement is the question of the independence of the review mechanism as it relates to the safety analysis process per se. An alternative which is of a different "set" from those discussed in this report is the possibility of simply fixing the responsibility for ensuring the independence of the reviews at the lowest possible management level. Instead of Headquarters ASFE attempting to establish a finite review scheme for all ASFE projects, a management scheme based on the FE management program could be implemented, for all but the major system acquisitions.

This technical report examines the efficiency of various means of accomplishing the review process called for in the DOE 5481.1. Several factors, including the level of risk and the nature of each particular project, will affect the type and scope of the safety analysis and the associated technical and professional expertise necessary for its evaluation. Sections 2 and 3 of this report discuss the relative merits and approximate associated costs, respectively, of the following entities performing the reviews:

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*The resource problem at the Operations Offices is briefly discussed in Section 2 of this report.

- DOE Headquarters Staff
- DOE Operations Offices
- DOE Energy Technology Centers
- Contractors/Consultants
- Organizational Combinations

The aim of this technical report is to provide an objective discussion of the alternative mechanisms open to DOE officials for providing the reviews. These alternatives are evaluated but no recommended course of action is specified. The eventual designation of review entity is the responsibility of DOE policymakers.

1.2 BASIS FOR FINDINGS

As a basis for this report, AFMA personnel made a number of site visits to interview DOE health and safety personnel and others involved in the management of DOE projects. For instance, staff members have visited the Laramie and Grand Forks Energy Technology Centers, the Chicago Operations and Regional Office, and the Huntsville Division of the Corps of Engineers (the COE is managing the Conoco and ICGG projects). These meetings provided valuable information on the status of SARS in the field, and how the reviews were going to be performed. They also served to point out where there were shortages in staff or travel funds that were likely to hamper the field offices in the performance of reviews. In this way, AFMA was able to observe first hand what some of the relative merits of the alternatives might be.

The cost estimates presented in Section 3 of this report were prepared by first making an evaluation of the types of personnel and the associated skill mix necessary to perform an adequate and complete SARS review. This was accomplished through a two-pronged approach. First, an assessment was made of the review requirements presented in DOE 5481.1, the FE SARS Implementation Plan, the Draft FE SARS Guidelines, and the SARS Management Directives, Implementation Plans, and Orders for a number of DOE field offices (e.g., SAN, ALO, CORO, LETC). In addition, AFMA has provided FE with a number of "surrogate" reviews; that is, AFMA has reviewed the safety analyses for several DOE projects in much the same way as would be required under DOE 5481.1. For example, reviews were provided to OPTA-ESH for the CFFF MHD project and for the IITRI slagging gasifier.

This first-hand experience provided AFMA with additional background on which to base the assessment of review requirements and associated costs. In this way, AFMA was able to evaluate the numbers and types of persons needed to staff the review panel, and then estimate the relative costs of government and contractor provided reviews. To be credible, the reviews must be provided by a sufficient number of persons with appropriate credentials and who are, for the most part, not associated with the project under review.

2. ALTERNATIVES EVALUATION

2.1 DOE HEADQUARTERS STAFF

The review process could be focused at DOE Headquarters for all moderate and high risk projects. However, considering the number of operations requiring safety analyses and, thus, reviews, this would impose a major workload upon ASFE. As shown in Table 2-1, recent estimates show approximately 50 projects in the moderate to high risk range, as opposed to only 11 low risk projects. Of the total, the overwhelming majority are moderate risk projects. Table 2-2 shows the approximate number of reviews expected to be required for projects in each risk category through 1985. Normally, a separate review panel would be required for each project except where there was similarity of projects' hazards and scope of safety analysis requirement. In reviews performed by AFMA under contract to DOE (see citation in Section 1.2 of this report), it has been found that each panel typically requires a qualified safety specialist, an independent authority on safety not under the direct control of DOE, and a member from another project under FE cognizance, but not in the same administrative management scheme as the project under review. Other group members should have technical or safety qualifications related to the unique characteristics of the involved project or facility.

A short and simple safety analysis document, such as for a low risk project, may be the subject of a single formal meeting of a review panel. A complex safety analysis (such as for a major system acquisition) is often developed in phases and should also be reviewed in phases. This would entail a major commitment of time and personnel resources for the formal review meetings and for fulfilling documentation requirements. In addition, site visits are often required for an adequate understanding of the safety analysis, especially in the case of high risk projects.

In light of these requirements, it is clear that a substantial number of additional environmental, health, and safety personnel would have to be hired by DOE in order for Headquarters to assume the entire review responsibility using DOE HQ employees. The major weakness of this option is that persons having no knowledge of the specific site and operation described in the safety analysis often would be charged with reviewing the adequacy of the document. This could result in either a deficient review or one which is extremely inefficient, time-consuming, and costly because the participants would be starting out so low on the learning curve.

The imposition of such a heavy workload upon ASFE could result in costly delays of safety reviews, resultant authorizations, and operation of the project. It also would not foster DOE's overall managerial approach

TABLE 2-1

Total Projects Tentatively Identified as Requiring SARS

Project Type	Risk Category		
	Low	Moderate	High
Liquefaction	1	3	0
Gasification	4	17	2
Oil Shale	0	4	7*
Magnetohydrodynamics	0	2	0
Enhanced Oil Recovery	0	1	0
Coal Oil Mixtures	1	0	0
Fluidized Bed Combustion	2	3	0
Tar Sands	0	2	0
Other	3	9	0
TOTAL	11	41	9

*Six of these projects are classified as moderate/high.

Source: "ASFE Plan for Implementing DOE Order 5481.1, Safety Analysis and Review System."

TABLE 2-2

Preliminary Schedule for Review of FE Projects*

FY	Risk Category Low	Moderate	High	TOTAL
1981	2	25	1	28
1982	2	15	2	19
1983	2	7	4	13
1984	0	6	2	8
1985	3	N/A	1	4

*It should be noted that many projects requiring reviews in the later years have not yet been identified. In addition, the total figures for this table may not sum to those on Table 2-1 since some projects are scheduled for more than one review while others are not yet scheduled for any.

Source: "ASFE Plan for Implementing DOE Order 5481.1, Safety Analysis and Review System (SARS)."

toward decentralization. However, DOE Headquarters is responsible for policy and program development, and accordingly, should be responsible for major decisions affecting higher risk operations. In addition, by having the reviews performed in a centralized manner, the reviewers would be provided with a learning opportunity which would not be available if the reviews were performed independently of one another.

As stated previously, the bulk of ASFE operations are considered moderate risks, with a small number of high risk projects. Thus, for HQ to assume review authority for only high risk projects would avoid many of the potential problems. In addition, the difficulties associated with project unfamiliarity could be partially avoided if preliminary reviews were provided to the HQ review panel by the entity with direct project management authority. Figure 2-1 depicts one approach proposed for reviewing the analysis of ASFE operations. With approval at each stage, the safety analysis report is routed through project management, the Operations Office, and the program office. The independent review ultimately is provided by the Office of Plans and Technology Assessment (OPTA). This system provides for three levels of reviews, and thus has the potential to be very thorough. However, if this procedure is used for all high and moderate risk operations, a bottleneck is likely to form once the document reaches OPTA, since OPTA currently has insufficient personnel to provide all of the required independent reviews. In addition, OPTA would need sufficient lead time to develop the review panel and procedures if it were to be expected to complete the review in 45 days (i.e., OPTA likely would require several months advance notice in order to ease scheduling problems.)

2.2 DOE OPERATIONS OFFICES

As another option, the DOE Operations Offices formally could be delegated responsibility for safety reviews for additional projects beyond those for which they have been delegated project management responsibility by ASFE. The approved ASFE Implementation Plan for SARS* provides for such delegation on a case-by-case basis. This further delegation could be for review of moderate risk projects assigned to another Operations Office where there were problems of providing independence of reviews. Another approach could be to delegate review authority for projects assigned to one or more of the ETCs, regardless of any managerial or other assignment to the Operations Office. For this option to be viable, the requirements of the ASFE Project Management System in regard to the "Work Proposal and Authorization System" (WPAS)** would have to be met, in order to ensure that added resources would be available at the required time.

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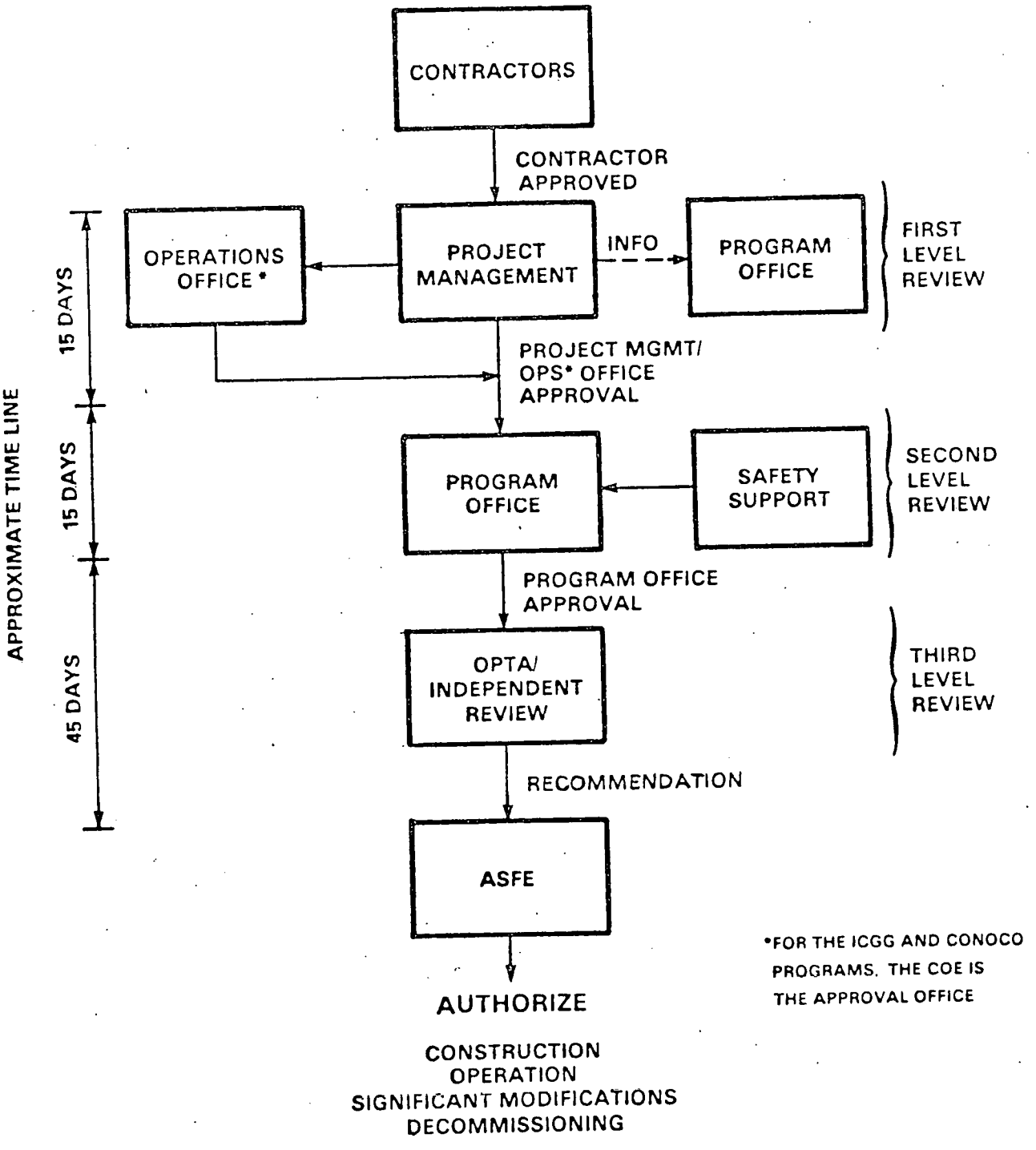
*"ASFE Plan for Implementing DOE Order 5481.1, Safety Analysis and Review System (SARS)."

**U.S. Department of Energy, Assistant Secretary for Fossil Energy, Fossil Energy Management Procedures Manual, January 1981.

Figure 2-1. SARS Approval Flow (High or Moderate Classes)



Source: From information provided by ASFE-OPTA-ESH.

There is a major advantage of delegation of review authority and responsibility to Operations Offices for other than assigned projects. It would guarantee independence of the review, and if properly planned by Headquarters, could avoid the "bunching" effect of having one review organization having to deal simultaneously, or nearly so, with several reviews. A reduction in overall resource requirements thus might be achieved. If a number of reviews were required in the same near time period, obviously more staff would be needed.

Delegating the responsibility to the Operations Offices would serve DOE's aim of decentralization to the field. However, it is not clear whether these offices could conduct the reviews with existing resources. For instance, in a recent report, GAO found deficiencies attributed to the lack of adequate staffing at the Oak Ridge Operations Office's Safety and Environmental Control Division (SECD). It was found that SECD had five safety professional vacancies in January 1980, with two of them remaining vacant due to the fact that they were recommended for downgrading under the civil service system. In another study, it was found that only two of the eight Operations Offices have safety staffs which are discrete organizational units with the Safety Director having direct access to the Field Office Manager. This factor could make it extremely difficult to coordinate and organize the safety review panels and manage the reviews in a effective manner. In addition, the professional staffing level has either decreased or remained the same at five Operations Offices since the AEC era. Without an increase in qualified environmental, health, and safety personnel, it would be impossible for the Operations Offices to handle the workload imposed on them if they were required to handle the reviews for all low and moderate risk operations.

If the review authority were to be delegated to the Operation's Office (or any other field organization), a plan for the review would need to be submitted to FE-OPTA prior to initiation. This plan would show who would be performing the review and how independence would be ensured throughout the review. The plan also would indicate the availability of resources, and the need for additional ones. To be effective and timely, such plans should be submitted on the time schedule for development of the WPAS. If not, then there will be delays in obtaining necessary resources. In addition to the plan, the results of the review process would be required to be transmitted in the form of evaluation reports to OPTA for final processing and authorization by FE.

2.3 DOE ENERGY TECHNOLOGY CENTERS

As another alternative, the Energy Technology Centers could have authority for safety reviews for moderate risk projects under their cognizance. These include on site projects, and those under their management in accordance with an approved Project Task Proposal Agreements. They also

could provide an initial review for high risk projects. The major benefit of having reviews performed by ETCs is the ease of communication between the ETC Safety and Health Manager and the contractor operating the project/facility. There could be a problem ensuring the independence of the review because of this, but this may be avoided to some extent if the Safety and Health Managers report directly to the ETC Directors. However, problems could still arise since the ETC Safety and Health Manager, in most cases, is already overloaded and may be so intimately involved with putting together the SARS documents that it would be impossible for this individual to be totally objective.

As with the Operations Offices, sufficient personnel resources may not be available to adequately review all safety analyses, and the skills available may be inappropriate to the task. As previously pointed out in this report, the resource situation for SARS, both in terms of manpower and funds for contractors, is very limited at the majority of the ETCs. According to information obtained during a site visit, LETC has programmed funds for safety analysis of major projects, but it is unclear as to what portion of the programmed funds would be used for reviews. PETC has safety and industrial hygiene resources which could be involved in reviews, but these resources also may be involved in the overview of analyses. Capabilities in areas such as system safety and quality assurance are limited there. METC has contract support (EG&G, Inc.) which could assist in reviews, but again there are questions of independence from the analysis efforts. Either additional in-house personnel would be required or consultants could be hired to act as the review body. In addition, review of materials provided by the ETCs as part of their OSH budget has shown that only minimal funding has been allowed for SARS (with the possible exception of LETC). For example, GFETC has requested only $160,000 for its entire OSH program, of which SARS is only a part. Table 2-3 summarizes the ETCs' projects and their estimated 1982-85 resource requirements for SARS.

It should be noted that the number of projects reported by the ETCs, as part of the Annual Report to ASEV, October 1980, may not correspond with the total of possible new projects subject to SARS for FY 81-FY 82. It has been impossible, to date, for AFMA to obtain definitive information in regard to those projects. It appears that this data is not readily available. Means to obtain information have been proposed to OPTA-ESH, as part of another task under this contract. Based on informal information provided by OPTA-ESH, it appears that there were a considerable number of new projects in FY 81 and FY 82 which could involve SARS. As the PTPAs and WPAS are developed for FY 1983, an effort is needed to finitely identify the projects subject to SARS, if actual review resource needs are to be developed concurrently.

TABLE 2-3

Current Estimated FY 82 - 85 Resource Requirements by ETCs for SARS*
(Analyses and Reviews)

ETC	Number of Projects	Government Employees Staff Years	Contractor $
PETC	14	.25	$20,000
GFETC	5	0**	0**
LETC	5	.25	20,000***
BETC	3	0.4	120,000
METC	6	N/A	N/A

*Based on information from site visits and OSH program/budgetary submission data.

**Reported all work complete.

***Reports possible $100-200,000 in 1982.

2.4 CONTRACTORS/CONSULTANTS

As specified previously, contractors could be utilized to coordinate review panels, ensure the provision of independent reviews, and maintain the documentation files.* They also could be employed to perform the actual reviews.

One of the major weaknesses of the use of contractors/consultants for other than planning and technical support functions is that the expertise required to examine the adequacy of the safety analyses in an objective manner is concentrated in relatively narrow sources. These include: energy related industries or associations; firms which have had substantial environmental, safety and health consulting assignments with such industries and/or with DOE, NIOSH, or EPA; and in special interest groups (e.g., environmental or industry advocates). The DOE industrial contractors operating the DOE GOCO National Laboratories also have varying degrees of expertise. Finally, some members of the academic community have sufficient knowledge and expertise to serve as members of review panels.

In each of the foregoing, there is the very real problem of true independence of reviews. There may be present real or perceived conflicts of interest and inherent biases which could affect the review process.

Another possibility not addressed in this present study is the use of the National Academy of Science/National Academy of Engineering for independent reviews of major projects having elements of controversy or high visibility. We have excluded the possibility of contracts to that end because of two concerns. The first embodies all of those described above. The second is the long reaction time which has historically been the pattern to establish and implement such study groups.

There are some advantages to use of contractors/consultants to accomplish SARS reviews for Headquarters, the Operations Offices, and the ETCs. Among these are:

- A separate contract could be provided for each review, tailored to the needs of the safety analysis in regard to depth of examination, types of expertise, and time involved.
- There are possible resource savings in terms of manpower utilization. There would be no need to consider if the manpower can be fully utilized in SARS.
- Overhead requirements in terms of office space, utilities, and related requirements are minimized.

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*The authority for this is provided in DOE Order 5481.1.

- Contractors can more easily obtain the services of needed consultant specialists than can the Federal personnel system procedure for short term consultant appointments. That latter avenue may be more severely restricted when the present Federal hiring freeze is replaced by new personnel policies.

The use of contractors or consultants could be viewed as a means of sidestepping recently established limits on the use of contractors/consultants in lieu of Federal employees. However, since DOE 5481.1 envisioned such use (as does 29 CFR 1960 for OSH programs) and antedates the new Administration's Executive Order, a case can be made against such a view.

Regardless of the final mode selected for reviews, contractor and consultant support can be useful at Headquarters, Operations Offices, and the ETCs for certain specialized needs. These include provision of capabilities not normally or readily available to examine considerations such as those relating to natural phenomena, toxicology, and specialized engineering analyses.

2.5 ORGANIZATIONAL COMBINATIONS

Some of the organizational combinations which could be utilized to perform the reviews have been touched upon in previous subsections. For example:

- ETCs could provide an initial review of high risk projects under their cognizance, with DOE HQ performing the final review; or

- Contractors could act as the review secretariat, with DOE HQ staff performing the actual reviews.

As another option, the HQ review panel could be comprised of safety and health experts from the Operations Offices, the ETCs, and HQ. Constraints on this alternative include the lack of available qualified field personnel and/or lack of available funds for the required travel. In addition, this option could result in persons having no knowledge of the specific site and operation described in the safety analysis being charged with responsiblity for reviewing the document. This could cause the review to be either deficient or extremely time-consuming.

On the whole, the set of alternatives utilizing combinations such as these could be hard to control since they seek to mesh a number of distinct organization entities. However, their major benefit is that they may allow for the most efficient arrangement of environmental, safety, and health experts from DOE offices and contractors/consultants when they are not available from a single unit.

2.6 CRITICAL CONSTRAINTS ON ALL ALTERNATIVES

As indicated in this report, there are deficiencies in existing resources to meet SARS requirements at all levels of the ASFE management structure. An estimate of the requirements for conducting reviews which meet the criteria of DOE 5481.1 is provided in the following section of this report. ASFE is currently (January 1981) in the initial phases of the budget planning process for FY 1983, as described in the ASFE Management Procedures Manual which as been cited several times herein and which is summarized in Appendix A. If any action is to be taken to provide for resources to meet deficiencies, early decisions appear to be needed as to which of the options or combinations of options are to be implemented. Budget/resource requirements can be met only by interjecting them into the ASFE management system. Therefore, if these decisions are not made in a timely manner, the requisite PTPAs and WPAS will not be entered into the system.

Any new resource funding will not be available from such actions until late calendar year 1982 at best, assuming the budget process is on schedule. Given that there is a need for meeting review requirements sooner than that, there may have to be near term approaches different from those which would be most desirable in the long term.

3. ESTIMATED COSTS OF ALTERNATIVES

In order to allow for a more thorough and balanced evaluation of the alternative review mechanisms, this section summarizes some of the respective costs of government employees and contractors providing the reviews.

For the purposes of this report, it is assumed that the rates for contractor professional and support personnel will not vary substantially from those for civil service employees. Thus, the GS pay scale was used to estimate the staffing costs for both contractor- and government-provided SARS reviews. These estimates then are used for the subsequent cost calculations made in this section.

Table 3-1 provides a summary of the types of personnel typically required to perform reviews of low, moderate, and high risk projects. As can be seen from the chart, the staffing requirements for the review of a high risk project's safety analysis have an associated overall hourly rate estimated at more than twice that for a low risk project's review. This is due to the fact that the analysis will be much more complex in nature for a high risk project than for a low risk project.

The estimated personnel-related costs summarized in Table 3-1 are used, as shown in Table 3-2, to estimate the yearly estimated staff-related costs for FY 1981-1985 for each class of review. Based on information provided in the ASFE SARS Implementation Plan, it is assumed that low, moderate, and high risk operations will require ten, twenty, and thirty staff days, respectively, for review. It should be noted that certain projects, such as large, high risk demonstration plants might require additional time for review. With projects such as these, an iterative review process usually would be utilized so that the review would be accomplished in stages, rather than at one time following the finalization of the safety analysis. The costs presented in this section assume that, for the most part, the reviews will be accomplished in a simple, straightforward manner, and that the safety analyses will not have to be returned continually for revision. It is felt that this assumption will be valid in most cases, and although costs may be higher for certain projects than those shown in this section, the figures for total estimated costs should not vary substantially because of this.

In Table 3-3, the total staffing costs across all risk classes are provided. These are used as the basis for the government and contractor total SARS-related costs appearing in the last two columns of the table. The overall figures for government-provided reviews assume a 50% overhead rate and 15% for fringe benefits; those for contractor-provided reviews

TABLE 3-1

Estimated Staffing Costs of SARS
Review Panels

High Risk Project

Panel Member	GS-Level	Hourly Rate*
Senior Systems Safety Manager	GS-15	$24.00
Senior Environmental Analyst	GS-14	21.00
Systems Safety Analyst	GS-13	17.00
Occupational Health and Safety Specialist	GS-13	17.00
Research Assistant	GS-9	10.00
Secretary/Stenographer	GS-7	8.00
Document/Clerk Typist	GS-5	7.00
TOTAL		$104.00

Moderate Risk Project

Panel Member	GS-Level	Hourly Rate*
Systems Safety Analyst	GS-13	$17.00
Senior Environmental Analyst	GS-14	21.00
Occupational Health and Safety Specialist	GS-13	17.00
Document/Clerk Typist	GS-5	7.00
TOTAL		$62.00

Low Risk Project

Panel Member	GS-Level	Hourly Rate*
Systems Safety Analyst	GS-13	$17.00
Environmental, Health, and Safety Analyst	GS-13	17.00
Document/Clerk Typist	GS-5	7.00
TOTAL		$41.00

*All assumed at mid-step 5 of GS pay scale.

Table 3-2

Estimated Staffing Costs for SARS Reviews

Risk Category	Hourly Rate* for Required Staff	Staff Hours per Review	No. of Reviews** Per Fiscal Year / Total Review Hours Per Year					Estimated Staff-Related Costs Per Year				
			1981	1982	1983	1984	1985	1981	1982	1983	1984	1985
Low	$41	80	2/160	2/160	2/160	-/-	3/240	$ 6,560	$ 6,560	$ 6,560	-	$ 9,840
Moderate	$62	160	24/4000	15/2400	7/1120	6/960	-/-	$248,000	$148,000	$69,440	$59,520	-
High	$104	240	1/240	2/480	4/960	2/480	1/240	$ 24,960	$ 49,920	$99,840	$49,920	$24,960

*Based on data from Table 3-1

**Based on data contained in ASFE SARS Implementation Plan. These estimates assume that clear direction is provided during the compilation of the safety analysis report, and that it will not require excessive rounds of revisions during the review process.

TABLE 3-3

Summary of SARS-Related Costs

Year	Total Staff Costs for for All Risk Classes	Total Estimated SARS-Related Costs	
		Government**	Contractor***
1981	$279,520	$461,208	$559,040
1982	$204,480	$337,392	$408,960
1983	$175,840	$290,136	$351,680
1984	$109,440*	$180,576	$218,880
1985	$ 34,800*	$ 57,420	$ 69,600

*Based on only partially complete data.

**Assumes 50% overhead rate and 15% fringe benefits. These figures would be significantly higher taking into account the other costs such as those associated with providing office space to new employees.

***Assumes 75% overhead rate and 25% for G&A. Does not include profit.

assume a 75% overhead rate and 25% for general and administrative expense. If it is assumed that the utilization of government employees to perform the reviews would entail the hiring of at least some new employees, the cost for this option would rise somewhat due to additional costs related to providing new employees with office space and incidentals. In summary, the total costs for government-provided reviews are not expected to differ markedly from contractor-provided reviews.

A detailed assessment of the number and types of ASFE's current HQ and field personnel needs to be made in order that the extent to which the resource requirements of SARS can be met with existing personnel may be determined.* If it is determined that few new Federal personnel would be needed (e.g., if the review panels were made up of experts from the DOE field offices), the incremental costs of SARS would be much lower for government-provided reviews.

On the other hand, if it were decided that HQ would review all high and moderate risk projects, additional employees doubtlessly would need to be hired. In this case, an assessment needs to be made as to whether there is sufficient workload in SARS and related efforts to enable efficient utilization of any newly hired personnel. For example, in FY 1982 there are expected to be reviews of fifteen moderate and two high risk projects for a total of 320 hours of review time (essentially 15% of one staff year). Hiring several new staff members to perform the required reviews clearly would be inefficient unless the workload were such that there were other tasks which they could perform as well. If not, the use of contractors in a case such as this likely would be a more cost efficient route to take.

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*According to the ASFE SARS Implementation Plan, OPTA is responsible for establishing and keeping current information on resources available and being applied to SARS throughout FE.

4. COMPARISON OF ALTERNATIVES

Table 4-1 provides a summary of the relative merits of the alternatives discussed in this report. As can be seen from the chart, no alternative is clearly superior in terms of the characteristics described. The ultimate decision in regard to review authority rests with DOE officials and will depend upon the value which is placed upon each of the characteristics described, and the resource constraints discussed in this report.

TABLE 4-1

Summary of Alternatives

Merits / Alternative	Assures Independence	Requires Minimal New Staff Resources	Easy to Control and Overview	Provides Thorough Review	Allows Efficient Use of Resources
HQ					
Ops Office					
ETCs					
Contractors					
Organizational Combinations					

KEY:

 Greatest Merit

 Moderate Merit

 Least Merit

APPENDIX A

Summary of the ASFE Budget Process and Implications for SARS

APPENDIX A

I. UNDERSTANDING THE OVERALL FEDERAL BUDGET PROCESS

A. The basic Federal budget process involves development by OMB of overall budget guidance for the agencies to follow, then budget and program planning by the agencies, review by OMB, approval by the President, and submission to the Congress of the budget. Congress then holds hearings, and enacts appropriations for the agencies. Once appropriated, the OMB apportions the funds to the agencies.

The starting point of the process is evalution by OMB in conjunction with the Secretary of the Treasury of the expected Federal Income, the National Debt, and the mandates of Congress in various acts, plus other considerations such as National Intelligence Estimates.

B. The basic budget cycle, into which DOE and other Federal agencies must fit their planning and actions, is based on the U.S. Fiscal Year and Congressional budget procedures. The cycle starts approximately 14 months before the President submits his budget for the next FY, in January of each year.

Figure 1 depicts the process in simplified form.

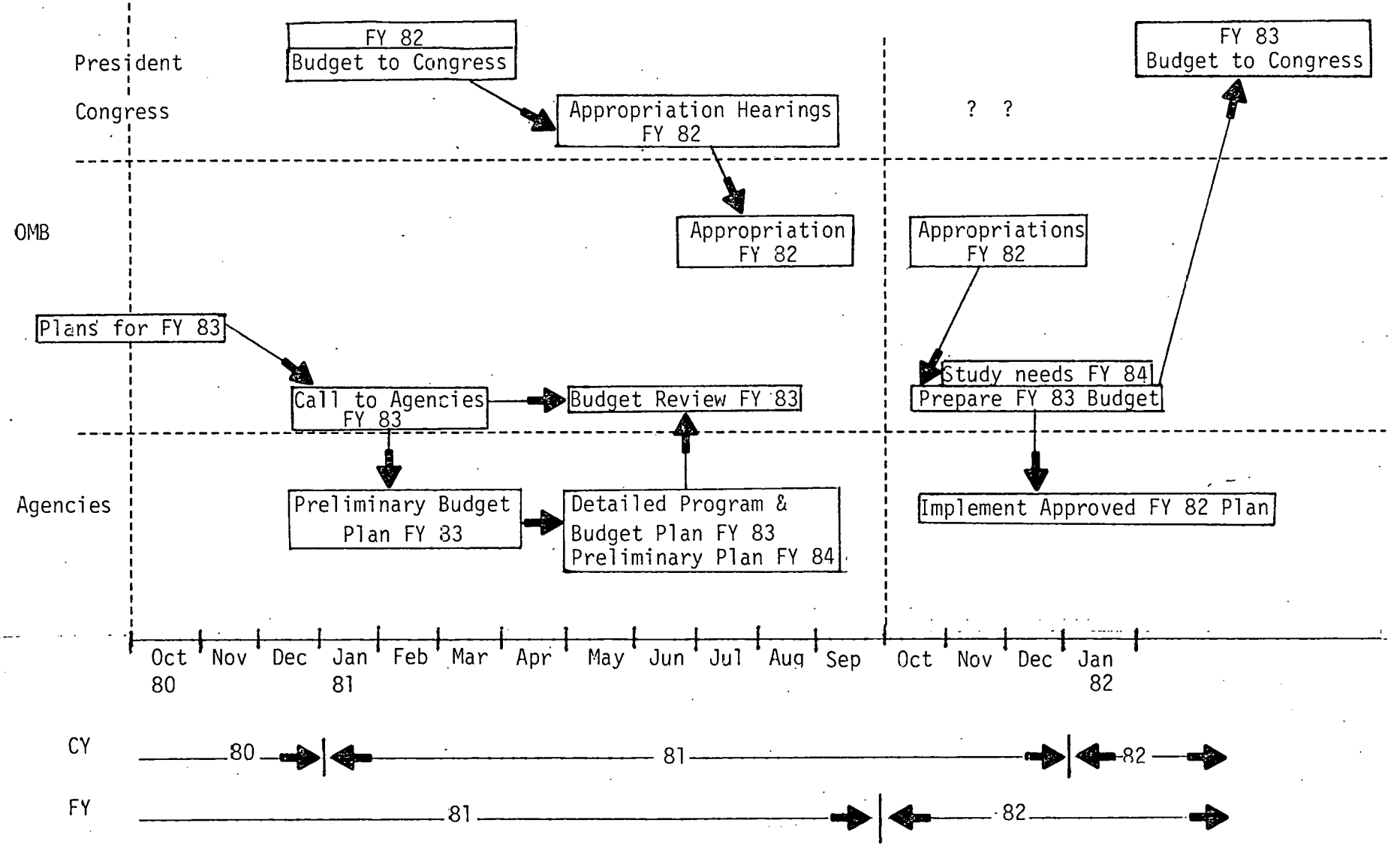
II. HIGHLIGHTS OF "FOSSIL ENERGY MANAGEMENT PROCEDURES MANUAL" - JANUARY 1981

A. Basic Purpose - (paragraph 2.0, Chapter I) - provides throughout FE standardized procedures to:

- Inform all participants in FE programs.
- Achieve and maintain an orderly and timely flow of information on programs and budgets.
- Provide means for adequate and timely plans for program execution.

The implications of this policy to SARS and to the entire Occupational Safety and Health Program are major. If resources to meet established needs are to be available, two major actions within the FE Management System are needed. The first is the development at appropriate levels of the FE Management Structure of program plans for OSH and SARS requirements. The second is the translation of those plans into the appropriate budget plan documents and their entry into and processing within the system.

? = Possible Continuing Resolution to keep Government running while Congress deliberates



B. Basic Definitions.

"Budget Year." Next FY beginning in October of the second calendar year ahead. In other words, as an example: the "Budget Year" being worked on in CY 1981 is FY 83.

"Budget Year + 1." This is the Budget Planning Year. In above example is FY 84.

JAUP. Justification for Accepting Unsolicited Proposals.

JNCP. Justification for Non-Competitive Proposals.

PTPA. Project/Task Proposal Agreement.

WPAS. Work Package Proposal and Authorization System.

C. Schedules.

January - Secretary of DOE issues to Assistant Secretaries the DOE "Policy, Program, and Fiscal Guidance." ASFE then issues to Deputy Assistant Secretaries, Program Managers, and Directors of ETCs, the implementing "Budget and Fiscal Guidance." If OSH and SARS requirements are to be addressed, an input is needed by those responsible for those functions into the "Budget and Fiscal Guidance." DAS, Program Managers, and Directors of ETCs, are to focus on resource requirements for the "Budget and Planning Year." Their responses are reviewed at Headquarters. This is the first opportunity for OPTA-ESH to have a direct influence on the planning and supporting resources, for the ETCs, Operations Offices, and needs at the Headquarters level.

March - ASFE issues the FE "Spring Call" to the Directors of ETCs. The "call" focuses on program plans for the "Budget Year" and "Budget Planning Year." It provides guidance for both. Here is a further opportunity for Headquarters ESH staff to provide guidance since the call directs submission of Instititutional Plans and PTPAs, and WPAS. These can include requirements for Safety Analysis and Safety Analysis reviews, appraisals of OSH and ES&H programs for contractors subject to OSH clauses; and for the normal operation of the OSH Program. The Headquarters DAS and Program Managers (including OPTA) are to provide additional technical data, and to hold informal meetings and discussions in their areas. An opportunity is afforded Headquarters OSH staff to interact with the ETC OSH officials and provide guidance and assistance.

The ETCs and Headquarters at this time also issue guidance to WPAS contractors through the Operations Offices. This affords an opportunity for inclusion of such requirements as SARS. It also affords an opportunity for Headquarters to negotiate with Operations Offices for any needed OSH support by the Operations Offices. It is at this point that the Headquarters OSH staff could identify needed OSH research, based on evaluation of the EDPs and ECPs, and the preliminary reviews with the ETCs, and to recommend action thereon. It also provides an opportunity to identify Headquarters needs which cannot be met in the field.

April - ETCs prepare PTPAs for projects in their areas of responsibility and submit to Headquarters for review by DAS, Program Directors, and OPTA. A further opportunity to evaluate adequacy of OSH input is provided at this time.

March/April - The Directors of ETCs prepare initial Institutional Plans for submission to Headquarters in May. The ETC OSH staff need to ensure that their needs are interjected into this process.

May - Secretary of DOE issues "Program Decision Memorandum." ASFE can submit appeals. ASFE issues "Formal Guidance" based on the PDM to the DAS, PMs and ETCs.

July - September - DOE holds internal budget hearings. This results in the Secretary's Budget Decision Memorandum which is the basis for the DOE submission to OMB for the Budget Year. This is the last opportunity for ETCs, Program Managers, and Headquarters OSH staff to have any input into the budget process for that FY budget.

July - The Assistant Secretary, DAS, Program Managers, and ETCs start final development of the Program Execution Plan (PEP).

August - The DOE Controller issues to the Assistant Secretary of DOE "Call for an Initial Approved Funding Program." ASFE responds. This is the plan for the next FY, assuming Congress acts on the Appropriation (?) Act.

September - ASFE reviews the Program Execution Plans, and approves same.

D. Role of the Project/Task Proposal Agreement (PTPA).

The PTPAs provide descriptions of project tasks for research and development. They provide the rationale for support requirements (such as SARS and OSH) as detailed in the Institutional Plans. They serve as the basis for funding ceilings at the ETCs. The Institutional Plan describes the manpower and facility support needed to implement the ETCs' programs. There have, accordingly, major implications to the SARS and OSH requirements at the ETCs.

1. ETC OSH staff need to interact with the ETC staff responsible for preparation of the PTPAs and Institutional Plan to determine needs for OSH overveiw and OSH programmatic needs. As part of this, identification should be made of new on and off site (cost share, etc.) projects which should have SARS requirements included. This effort should also identify projects which have safety and health clause requirements and this will require appraisals and inspections by the LETC in compliance with 5482.1.

2. What amounts to OSH PTPAs should be developed for SARS, Programmatic OSH needs at the ETC regarding Federal employees; and Inspection and Appraisal Programs. These PTPAs would serve as the basis for the OSH manpower and other resource needs for the ETC funding.

E. Processing of the PTPAs at Headquarters.

The Deputy Assistant Secretary, Program Managers, and OPTA (per FE Manual, Chapter II) assist in preparation of program and funding guidance as discussed earlier. They review the ETCs' PTPA after initial screening by the Headquarters ASFE Special Assistant for Field Coordination, Office of the Deputy Assistant Secretary for Management.

This review process provides feedback to the ETCs on funding levels, manpower loading, milestones, etc. The ETC submission is evaluated against the previously issued Headquarters guidance. After review, and if needed, negotiation with the ETCs, Headquarters offices approve the PTPAs and forward for further action to Headquarters ASFE Office of Resource Management. A Program Guidance Letter is then issued by Headquarters ASFE.

This system provides a mechanism for Headquarters OSH staff to ascertain if OSH policy and specific guidance previously issued has, in fact, been incorporated into the Program Plan and budget request process.

F. The Work Package Proposal and Authorization System (WPAS).

The WPAS provides the means for Headquarters Program Offices and the ETCs to obtain support from the Operations Offices and from WPAS contractors. It also provides means to designate discrete program support tasks and to record agreements.

The Deputy Assistant Secretaries, Program Offices, and OPTA are directed to assist in preparation of program and funding guidance. They also review WPAS proposals that support Headquarters ASFE offices, to be sure of consistency with Headquarters approved program and funding guidance. After review, and taking action regarding any descrepancies, the WPAS are approved by the DAS, etc.

The ETCs provide specific guidance to the Operations Offices and contractors for preparation of the WPAS. They review the WPAS before submitting to Headquarters. The Operations Offices assure that assigned tasks are accomplished after approval.

At the ETCs, procedures for processing and approving WPAS submissions are to be established. As a minimum, these must include examination for consistency with guidance, technical content, and contribution to project objectives.

This system provides a mechanism whereby such needs as SARS Reviews, appraisals and inspections of cost share OSH plants, and other technical needs of the OSH program can be identified, established, and funded at the Operations Offices, or by WPAS contractors. At Headquarters, the opportunity exists for early input to the guidance and follow-up. At the ETC, this provides for any needed support by the Operations Offices. The critical schedule for the WPAS, which requires action by OSH staff at Headquarters and the ETCs is the January-July time period each year.

January	FE & ETC	Issue "Tentative Guidance"
March	FE & ETC	Issue "Fiscal Guidance"
April	O.O. & Labs	Submit proposals
May	FE & ETC	Issue "Budget Guidance"
June	O.O. & Labs	Submit update
July	FE & ETCs	Approve WPAS

G. Program Execution Plan (PEP).

The PEP is produced by the ASFE Business Management Information System. The PEPs provide details of funding to the lowest identifiable element. If action is not taken at the ETCs regarding PTPAs and WPAS including specific elements relating to SARS and to OSH functions, they will not show up in the PEP. At the present, based on prior studies, it does not appear that the BMIS system does include in depth SARS or OSH elements.

H. Procurement Request Processing.

The ETCs have local approval authority for up to $1,000,000. Other projects require Headquarters approval. The need for careful attention to SARS and OSH requirements in the various Headquarters reviews, and in preparation of guidance, is evident. The Integrated

Procurement Management Information System (IPMIS) is another tool available to Headquarters OSH staff in tracking the OSH program implementation, assuming that appropriate inputs are made into it. One test conducted for AFMA to see if BMIS and/or IPMIS could identify cost share contracts subject to safety and health clauses indicates that the system is not completely responsive to that requirement.

III. SOME PROBLEMS

The structure for better management of the SARS and OSH Programs requirements exist in the FE "Management Procedures Manual." The central element of that approach appears to be the formalized guidance and review system, which allows Headquarters to instruct the field as to needs and objectives, and then to ascertain if those are being translated into plans and resource requests.

There are several problems affecting the overall OSH (including SARS) program which require attention. These include:

- There is a need for better understanding of the management process on the part of the field OSH staff.
- The lack of adequate resources in HQ OPTA-ESH can result in inadequate inputs into the guidance sent to the field.
- That same deficiency can result in the inability to promptly and effectively review and evaluate PTPAs, WPAS, Institutional Plans and other inputs to the management process.
- There is a need for some method for incorporating the results of appraisal programs (e.g., DOE 5482.1 for ESH) into the budget process.

Overall, it appears there is a need for some form of formal directives as to the incorporation of the OSH (and, indeed, the entire ESH) program inputs to the FE management system. To be successful, there would then be the need to include in the appraisal system, vigorous follow-up to ensure implementation.